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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/075,777	02/14/2002	Daniel P. Lawrence	5898-000194	9179
27572	7590	12/18/2003	EXAMINER	
HARNESS, DICKEY & PIERCE, P.L.C. P.O. BOX 828 BLOOMFIELD HILLS, MI 48303			VIJAYAKUMAR, KALLAMBELLA M	
			ART UNIT	PAPER NUMBER
			1751	

DATE MAILED: 12/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/075,777

Applicant(s)

LAWRENCE ET AL.

Examiner

Kallambella Vijayakumar

Art Unit

1751

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on Application filed 02/14/2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-42 is/are pending in the application.
- 4a) Of the above claim(s) 20-42 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

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**Detailed Action**

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- Claims 1-42 are pending with the application.
- The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.
- The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the examiner on form PTO-892 has cited the references and/or the applicant has provided them on PTO-1449, they have not been considered.

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***Election/Restrictions***

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Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-19, drawn to composition of conductive ink, classified in class 252, subclass 500.
- II. Claims 20-26, drawn to method of printing, classified in class 101, subclass 130.
- III. Claims 27-35, drawn to an article, classified in class 206, subclass 524.3.
- IV. Claims 36-38, drawn to method of making electrical circuit/component, classified in class 29, subclass 830+.
- V. Claims 39-42, drawn to Electrical circuit/component, classified in class 428, subclass 901+.

Inventions II and I are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case the process could be carried out using color printing ink.

Inventions III and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the process could be used to print posters.

Inventions IV and III are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the Group-IV relates to method of making electrical components, and the Group-III is related to an article that could be used as a satellite dish.

Inventions V and IV are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the process could be used to print a magazine while the product could be made by photolithography.

Inventions II/III and IV/V are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not

require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because combination could be used to make a printed circuit board. The subcombination has separate utility such as an antistatic coating.

Inventions II/III and I are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention I has separate utility such as electromagnetic coating. See MPEP § 806.05(d).

Inventions I and V/VI are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention I has separate utility such as anti-static paint. See MPEP § 806.05(d).

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, and the search required for Group I is not required for Group II/III/IV/V, and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

During a telephone conversation with Anna Budde on 12/04/2003 a provisional election was made with traverse particularly with group-II to prosecute the invention of Group-I, claims 1-19. Affirmation of this election must be made by applicant in replying to this Office action.

Claims 20-42 withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

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*Claim Rejections - 35 USC § 102*  
*Claim Rejections - 35 USC § 103*

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The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

- (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
- (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
- (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
- Claims 1-5, 8, 10-12 and 14-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Yoshimura et al (JP 11-302587).

Yoshimura et al teach water based metallic ink comprising of metal powder/flake, a pigment, an anionic polymer such as styrene-acrylic copolymer or styrene-maleic acid copolymer or cellulose materials, and water-soluble solvent. The metal flakes in the ink composition included copper flakes and aluminum flakes. Yoshimura et al further teach the use of conductive oxides of iron and titanium, and carbon black in the ink composition. Any flake would inherently meet an aspect ratio of 5:1, and the conductive property of the ink would be inherent by virtue of the dispersion of conductive metallic particles (Abstract, Sections: 0019-0028, 0041, 0047, 0048). The examiner construes the aspect ratio for the flakes to be the ratio between the major axis (length) and the minor axis (width) of the flakes. All the limitations of the instant claims are met.

The reference is anticipatory.

- Claims 1-3, 5-7, 9, 12-14, 16, and 18 rejected under 35 U.S.C. 102(b) as being anticipated by Okada et al (US Patent # 5,705,098) in view of Dainippon (JP 08-231906).

Normally, only one reference should be used in making a rejection under 35 U.S.C. 102. However, a 35 U.S.C. 102 rejection over multiple references has been held to be proper when the extra references are cited to (SEE MPEP 2131.01):

- (A) Prove the primary reference contains an "enabled disclosure;"

- (B) Explain the meaning of a term used in the primary reference; or
- (C) Show that a characteristic not disclosed in the reference is inherent.

Okada et al teach composition of aqueous based electro-conductive paints comprising of antimony-tin-oxide particles with an aspect ratio of greater than three dispersed in a binder of acryl-styrene copolymer and/or cellulosic resin (Col-1, Lines: 44-58; Col-8, Line-39 to Col-9, Line-5) and further teaches the variation of ratio of conductive particles, binder and solvent to attain desired composition of the ink. The acid values for the styrene copolymers in the instant ink composition would be inherent as shown by the acid values for the styrene copolymers in aqueous inks by Dainippon ink and Chem. Inc (Abstract). All the limitations of the instant claims are met.

The reference is anticipatory.

- Claims 1-19 rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshimura et al (JP 11-302587) in view of Okada et al (US Patent # 5,705,098) further in view of Dainippon (JP 08-231906) or Kuwajima et al (US Patent 5,951,918).

The disclosure by Yoshimura et al on the composition of metallic ink is set forth as above.

Yoshimura et al does not disclose or suggestive of using the oxides as the conductive component of the ink or the aspect ratio of the conductive particles.

The disclosure by Okada on the conductive ink is set forth as above.

Neither Yoshimura et al nor Okada et al teach or suggestive of varying the ratio of conductive particle to conductive flakes in the composition of conductive paint/ink.



Kuwajima et al teach the use of several coated particles as conductive component in the formulation of conductive paste and the distinction between a paste/paint and ink would be viscosity (Col-3, Line-1 to Col-4, Line-37).

Yoshimura teaches making of ink and modifying its composition by varying the content of metallic flakes, oxides, pigments, styrene-copolymer and cellulose, the same materials being used and claimed by the applicants in the instant claims. Okada teaches the use of ATO and copolymer of styrene in the conductive ink, the same components claimed by the applicants in the instant claims. It would have been obvious for one with ordinary skill in the art to modify the composition of Yoshimura et al by choice of design, by incorporating carbon or graphite as conductive agents that is well known in the art and/or per the suggestions of Yoshimura et al; and/or include/substitute the conductive particles with oxides of Okada to obtain transparent conductive ink/coatings, and optionally vary the ratio of particle to flakes to get better contact per the teachings of Kuwajima et al, in order to benefit from such modifications, because all the teachings are in the analogous art of inks comprising conductive particles, and with the expectation of reasonable success in arriving at the limitations of the instant claims by the applicants.

- Claims 1, 3-6, 8-9, 12 rejected under 35 U.S.C. 102(b) as being anticipated by Taguchi (US Patent 3,349,055).

Taguchi teaches the conductive ink comprising of carbon black and ammonium salt of styrene-maleic acid copolymer, wherein the acid values would be inherent (Col-4, Lines: 16-32). All the limitations of the instant claims are met.

The reference is anticipatory.

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*Indication of Allowable Subject Matter*

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The applicants are invited to contact the examiner in order to discuss the allowable subject matter. Prior art of record neither teaches nor suggestive of conductive ink containing conductive particles of Mica coated with ATO, ITO, ATO/ITO, TiO<sub>2</sub>/ATO/ITO per the limitation of a portion of the claim-18.

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*Conclusion*

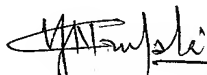
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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kallambella Vijayakumar whose telephone number is 703-305-4931. The examiner can normally be reached on M-Th, 07.30 - 17.00 hrs, Alt. Fri: 07.30-16.00 hrs.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Yogendra Gupta can be reached on 703-308-4708. The fax phone number for the organization where this application or proceeding is assigned is 703-305-3599.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

KMV  
December 10, 2003

  
YOGENDRA N. GUPTA  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700